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| 10/063,962 | 05/30/2002 | Robert William Bruce | 13DV-13657 | 4043 |

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EXAMINER

MCNEIL, JENNIFER C

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1775

DATE MAILED: 04/28/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

10/063,962

Applicant(s)

BRUCE, ROBERT WILLIAM

Examiner

Jennifer McNeil

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the 'right to exclude' granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 3, 4, 14, and 15 are provisionally rejected under the judicially created doctrine of double patenting over at least claims 1 and 2 of copending Application No. 09/833,446. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the prior application teach a coating on a surface wherein the coating consists essentially of zirconia stabilized by up to 3 wt% yttria and to which may be alloyed lanthana in a range of 5.8-22.5 wt%. While the instant claims teach the zirconia stabilized with up to 10% yttria to which is alloyed up to 5 wt% lanthana, it is the position of the examiner that one of ordinary skill in the art would find it obvious to add yttria at a value that is encompassed by the range of "up to 10wt%" and the term. Also, the term "about 5 wt%" is considered to encompass the ranges taught by '446. The recital of the limitations in '446 that the microstructure contains crystallographic defects is considered to be an

Art Unit: 1775

inherent property as they are formed by the additional metal oxide, and would be possessed by the instant article. The instant limitation of the oxide additive being uniformly incorporated atom-by-atom is considered "alloyed".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 6, 9-14, 16, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Rickerby et al (US 6,025,078). Rickerby teaches a thermal barrier coating comprising zirconia, 4-20 wt% yttria, and 4-25 wt% neodymia (col. 4, lines 42-48). The neodymia is added to reduce the thermal conductivity of the ceramic thermal barrier coating. The addition of the second oxide is performed by distributing the oxide substantially evenly throughout the lattice structure of the ceramic thermal barrier coating (col. 7, lines 41-46).

Regarding claims 2, 9, and 18, the coating may include only zirconia, yttria, and neodymia.

Regarding claims 6 and 16 the ranges of neodymia in the instant claims overlaps at 4 wt%.

Regarding claim 10, the range of the yttria overlaps at 4 wt%.

Regarding claims 11, and 14, the substrate may be a superalloy, and a bond coat may be used between the substrate and the thermal barrier coating (col. 3, lines 55-60).

Regarding claims 12 and 19, the bond coat may be a platinum aluminide (col. 3, lines 62-65).

Regarding claims 13 and 20, the component may be a gas turbine airfoil (col. 1, lines 5-10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 7-11, 13, 14, 17, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spengler et al (US 4,579,874) in view of Tien (US 4,886,768). Spengler teaches a turbine engine blade with a superalloy substrate, a bond coat, and a yttria-stabilized zirconia thereon. Spengler teaches that the zirconia layer provides protection to the underlying substrate but is susceptible to cracking (col. 2, lines 61-65). Spengler does not teach additional materials that may be used as the ceramic coating. Tien teaches a toughened ceramic. The ceramic comprises zirconia stabilized with yttria, to which is added an effective amount of a toughening agent, Ta_2O_5 . The toughening of the stabilized-zirconia is accomplished by the alloying effect of the additive (col. 2, lines 1-10, 30-33). The additive also increases the fracture toughness of the material (col. 6, lines 38-41). The tantalum may be added in amounts of 0.5-1.5 mol% (Table 1). The yttria may be added at an amount of 3 mol%. While the instant claims are in wt%, it is the examiner's position that these ranges overlap with those of the instant claims. Tien does not teach application of the stabilized zirconia to a substrate, but does contemplate its use as a coating (col. 1, lines 44-46). Tien also states that the material may be used in a variety of applications and environments. As it is taught by Tien that yttria-stabilized zirconia may be further strengthened by the addition of tantalum, it would have been obvious to one of ordinary skill in the art to use this strengthened material in place of the stabilized zirconia layer in Spengler, to provide a turbine engine component with improved impact resistance and increased fracture toughness.

Regarding claims 2, 9, and 18, the coating may comprise only zirconia, yttria, and tantalum.

Art Unit: 1775

Regarding claims 11 and 14, as stated above, a bond coat may be present between the substrate and the ceramic coating.

Regarding claims 13 and 20, the substrate may be a turbine blade.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer McNeil whose telephone number is 703-305-0553. The examiner can normally be reached on Monday through Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 703-308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



JCM
April 17, 2003

Jennifer McNeil
Examiner
Art Unit 1775